

WHAT IS CLAIMED IS:

1. An isolated polynucleotide comprising a polynucleotide selected from the group consisting of:

- 5           (a) a polynucleotide at least 97% identical to the nucleotide sequence of SEQ ID NO: 15, and  
            (b) the full complement of (a).

10           2. The isolated polynucleotide of claim 1 wherein the polynucleotide of (a) is at least 99% identical to the sequence of SEQ ID NO: 15.

3. The isolated polynucleotide of claim 1 wherein the polynucleotide of (a) has the sequence of SEQ ID NO: 15.

15           4. An isolated polynucleotide comprising a polynucleotide selected from the group consisting of the sequence of SEQ ID NO: 11, SEQ ID NO: 13 and the full complement of either.

20           5. An isolated polypeptide comprising an amino acid sequence at least 96% identical to the amino acid sequence of SEQ ID NO: 16 wherein any differences in sequence are due only to conservative amino acid substitution.

25           6. The isolated polypeptide of claim 5 wherein said amino acid sequence is at least 98% identical to the amino acid sequence as SEQ ID NO: 16.

7. An isolated polypeptide comprising an amino acid sequence selected from the group consisting of SEQ ID NO: 12, 14, 16, 17 and immunogenic fragments thereof.

30           8. An antibody that reacts with a PERV-A receptor.

9. The antibody of claim 8 wherein said PERV-A receptor is selected from the group consisting of a human PERV-A receptor and a baboon PERV-A receptor.

5           10. The antibody of claim 8 wherein said antibody reacts with a polypeptide selected from the group consisting of SEQ ID NO: 10, 12, 14, 16 and 17 or an immunogenic fragment thereof.

10           11. The antibody of claim 8 wherein said antibody is a recombinant antibody.

12. A vector comprising a polynucleotide of claim 1, 2, 3, or 4.

13. A recombinant cell comprising the vector of claim 12.

15           14. A recombinant cell comprising a polynucleotide of claim 1, 2 3, or 4.

15           15. A recombinant mammalian cell engineered to express on its surface a receptor comprising the polypeptide of claim 5.

20           16. A recombinant mammalian cell engineered to express on its surface a receptor comprising the polypeptide of claim 6.

25           17. A recombinant mammalian cell engineered to express on its surface a receptor comprising the polypeptide of claim 7.

18. A process for identifying a compound that interferes with porcine endogenous retrovirus (PERV)-binding to a cell comprising:

30           (a) contacting a compound with a PERV-A receptor molecule under conditions promoting binding of said compound to said PERV-A receptor, and

            (b) detecting binding of the compound to the PERV-A receptor,

thereby identifying a compound that interferes with PERV-binding to said cell.

19. The process of claim 18 wherein said PERV-A receptor comprises a polypeptide having an amino acid sequence selected from the group consisting of SEQ ID NO: 10, 12, 14, 16 and 17.

20. The process of claim 18 wherein said PERV-A receptor is part of a cell membrane.

21. The process of claim 20 wherein said cell membrane is part of an intact cell.

22. The process of claim 21 wherein said intact cell is a human cell.

23. The process of claim 21 wherein said intact cell is a recombinant cell engineered to express said polypeptide on its surface but that does not express said polypeptide absent said engineering.

24. The process of claim 23 wherein said cell has been transfected with a polynucleotide of claim 1, 2, 3, or 4.

25. The process of claim 18 wherein said contacting occurs in the presence of PERV and under conditions promoting binding of said PERV to said cell and detecting a decrease in binding of said PERV to said cell as compared to when said compound is not present thereby identifying a compound that interferes with PERV-binding.

26. A process for detecting the presence of a PERV-binding site on a cell comprising contacting a cell with an antibody of claim 8 and detecting binding of

said antibody to said cell wherein said binding indicates the presence on said cell of a PERV binding site.

5        27. The process of claim 26 wherein said PERV-binding site is a PERV-A binding site.

10        28. A process for detecting the presence of a PERV-receptor gene in a cellular genome comprising contacting a sample of said genome with a probe comprising at least 15 contiguous nucleotides of a polynucleotide of claim 1, 2, 3, or 4.

      29. The process of claim 28 wherein said fragment comprises at least 30 contiguous nucleotides.

15        30. The process of claim 28 wherein said fragment comprises at least 50 contiguous nucleotides.

20        31. The process of claim 28 wherein said comprises at least 100 contiguous nucleotides.

      32. The process of claim 28 wherein said probe is a polynucleotide of claim 1, 2, 3, or 4.

25        33. A process for blocking a PERV receptor on a cell comprising contacting a cell expressing a PERV receptor with an agent that binds to said PERV receptor thereby blocking binding of PERV to said cell.

      34. The process of claim 33 wherein said PERV receptor is PERV-A.

30        35. The process of claim 33 wherein said cell is a human cell.

36. The process of claim 33 wherein said agent is an antibody.

37. The process of claim 36 wherein said antibody is an antibody that reacts with a polypeptide comprising the amino acid sequence of SEQ ID NO: 10, 12, 14, or 16.

38. The process of claim 33 wherein said antibody is an antibody that reacts with an active fragment of claim a polypeptide comprising the amino acid sequence of SEQ ID NO: 10, 12, 14, or 16.

39. A process for protecting against PERV infection in a patient at risk of such infection comprising administering to said patient an effective amount of an agent that binds to PERV-A receptors thereby protecting against PERV infection.

40. The process of claim 39 wherein said PERV is PERV-A.

41. The process of claim 40 wherein the source of said PERV infection is a tissue used for transplantation.

42. The process of claim 41 wherein said transplantation is xenotransplantation.

43. The process of claim 39 wherein said agent is an antibody that reacts with a PERV-A receptor.

44. The process of claim 39 wherein said agent is an antibody that reacts with a polypeptide comprising the amino acid sequence of SEQ ID NO: 10, 12, 14, 16 or 17.

45. A method for producing a product comprising identifying an agent according to the process of claim 18 or 25 wherein said product is the data

collected with respect to said agent as a result of said process and wherein said data is sufficient to convey the chemical structure and/or properties of said agent.

5 46. A transgenic animal comprising cells into whose genome has been inserted a polynucleotide encoding a PERV-A receptor and which cells express said receptor on their surface but wherein said animal does not express said receptor absent said insertion.

10 47. The transgenic animal of claim 46 wherein said polynucleotide encodes a polypeptide having the amino acid sequence of SEQ ID NO: 12, 14 or 16.

15 48. The transgenic animal of claim 46 wherein said polynucleotide is the polynucleotide of SEQ ID NO: 11, 13 or 15.

49. The transgenic animal of claim 46 wherein said animal is a mouse.

20 50. A process for identifying a compound that protects against PERV infection comprising administering to a transgenic animal of claim 46 a compound identified as interfering with PERV binding using the process of claim 18, then challenging said animal with a source of PERV and then determining that said animal does not exhibit the symptoms of PERV infection compared to when said compound has not been administered thereby identifying a compound that protects against PERV infection.

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51. The process of claim 50 wherein said animal is a mouse.